ACCESSION NR: AP4017645 S/0190/64/006/002/0357/0361

AUTHORS: Firsov, A. P.; Ter-Gazaryan, A. D.; Chirkov, N. M.

TITLE: Polymerization of propylene in the presence of α - $TiCl_3$-$Zn(C_2H_5)_2$. 2. Factors determining the molecular weight of polypropylene

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 2, 1964, 357-361

TOPIC TAGS: propylene, polymerization of propylene, polypropylene, polypropylene molecular weight, catalyst, titanium trichloride, diethylzinc, chain propagation, chain inhibition, intrinsic viscosity

ABSTRACT: The effect of concentration of propylene, of temperature, and of diethylzinc on the molecular weight of the obtained polypropylene was investigated. The methods used were described in an earlier paper by A. P. Firsov, B. H. Kashporov, and N. M. Chirkov (Vy*sokomolek. soyed., 6, 348, 1964). Concentrations of 1.20-3.97 mole/liter of propylene were polymerized at 50, 60, and 70C on the system α -$TiCl_3$- $Zn(C_2H_5)_2$, and the intrinsic viscosities of the obtained polymers determined. It was found that the polymerization coefficient and the intrinsic viscosities increased with increased concentration of propylene, and that they were

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ACCESSION NR: AP4017645

significantly lower when compared with the respective values of polypropylene obtained on the α -$TiCl_3$ - AlR_3 and α - $TiCl_3$ - $Be(C_2H_5)_2$ systems. In another set of experiments under identical conditions, except for varying concentrations of diethylzinc, it was found that the viscosities and the polymerization coefficient of polypropylene decreased with increased concentration of diethylzinc. It was calculated that inhibition of chain growth was the predominant reaction in the polymerization of propylene on the α - $TiCl_3$ - $Zn(C_2H_5)_2$ system. Orig. art. has: 4 tables, 2 charts, amd 5 formulas.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, Academy of Scienoes SSSR)

SUBMITTED: 26Jan63 DATE ACQ: 23Mar64 ENCL: 00

SUB CODE: CH NO REF SOV: 002 OTHER: 002

Card 2/2

S/0190/64/006/003/0417/0420

ACCESSION NR: AP4030353

AUTHORS: Firsov, A. P.; Ter-Gazaryan, A. D.; Chirkov, N. M.

TITLE: Polymerization of propylene in the presence of α - $TiCl_3$ - $Al(C_2H_5)_3$ - $Zn(C_2H_5)_2$

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 6, no. 3, 1964, 417-420

TOPIC TAGS: propylene, propylene polymerization, catalytic system, alpha-titanium trichloride-triethylaluminum, diethylzinc, polypropylene, polymerization rate, catalytic center, polymeric chain

ABSTRACT: The polymerization of propylene was conducted in the presence of α - $TiCl_3$ - $Al(C_2H_5)_3$ - $Zn(C_2H_5)_2$, at 50C, and at a monomer pressure of 8.9 atmospheres in an n-heptane medium (with various concentrations of diethylzinc). It was found that during the initial period the rate of polymerization increased, following which it remained constant. At large concentrations of diethylzinc (0.344-1.05 mole/liter) the length of the increasing period of the polymerization rate and the stationary polymerization rate were practically identical. When diethylzinc was

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ACCESSION NR: AP4030353

added to the α - $TiCl_3$ - $Al(C_2H_5)_3$ system, the polymerization rate of propylene was 3 times lower, and the molecular weight of the polypropylene produced was 20 times smaller. The authors assume that such an inhibiting effect of diethylzinc is due to an exchange of the alkyd group of diethylzinc for a polymeric chain of a catalytic center on the α - $TiCl_3$ - $Al(C_2H_5)_3$ system. From the records of relationship between the molecular weight of polypropylene and the diethylzinc concentration, the ratio of the constants K^{Zn}_{lim}/K_r was calculated and proved to be independent of the temperature factor. Orig. art. has: 5 formulas and 3 charts.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AN SSSR)

SUBMITTED: 04Feb63 DATE ACQ: 07May64 ENCL: 00

SUB CODE: CH NO REF SOV: 003 OTHER: 004

Card 2/2

VARADI, Ye.; TSVETKOVA, V.I.; CHIRKOV, N.M.

Catalytically active particles in the $TiCl_4$ - Et_2AlCl system during the polymerization of ethylene. Dokl. AN SSSR 152 no.4:908-910 O '63. (MIRA 16:11)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno akademikom N.N. Semenovym.

KISSIN, Yu.V.; TSVETKOVA, V.I.; CHIRKOV, N.M.

Determination of the degree of isotacticity of polypropylene from its infrared spectra. Dokl. AN SSSR 152 no.5:1162-1165 O '63. (MIRA 16:12)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno akademikom N.N.Semenovym.

RASPOPOV, L.N.; PIROGOV, O.N.; CHIRKOV, N.M.; LISITSYN, D.M.

Mechanical properties of -polyolefins. Part 1: Dependence of the mechanical properties of polypropylene on its molecular weight and fractional composition. Vysokom. soed. 5 no.12:1761-1764 D '63. (MIRA 17:1)

1. Institut khimicheskoy fiziki AN SSSR.

S/0190/64/006/002/0352/0356

ACCESSION NR: AP4017644

AUTHORS: Firsov, A. P.; Kashporov, B. N.; Chirkov, N. M.

TITLE: Polymerization of propylene in the presence of alpha-$TiCl_3$-$Zn(C_2H_5)_2$. 1. The polymerization rate and the stereoisomeric composition of the polypropylene

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 6, no. 2, 1964, 352-356

TOPIC TAGS: polymer, polymerization, polymerization rate, propylene, polypropylene, catalyst, cocatalyst, titanium trichloride, diethylzinc, triethylaluminum, diethylberyllium, activation energy, stereospecific action

ABSTRACT: The polymerization of propylene was conducted in a specially constructed installation (as shown in Fig. 1 of the Enclosure) in n-heptane solution at superatmospheric pressure, in the presence of the catalytic system alpha-$TiCl_3$-$Zn(C_2H_5)_2$. At a constant pressure of 9 atm and at 60 and 70C the polymerization rate increased during the first 2 and 3 hours, then leveled off. The observed polymerization rate was 100 and 300 times lower than the respective rates obtained with $Al(C_2H_5)_3$ and $Be(C_2H_5)_2$ as cocatalysts. In another test, where the concentration of propylene was the only variable, the polymerization rate at 3 atm showed a deviation from a first order of magnitude towards a higher level. Within a pressure range of 5-9 atm an almost linear dependence of the polymerization rate from the concentration of propylene was recorded. An increase in concentration of the zinc catalyst

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ACCESSION NR: AP4017644

within 0.0518-0.551 mol/liter resulted in an increased polymerization rate. The effective activation energy of the polymerization process by the Ti-Zn catalytic system was found to be 8200 cal/mole. It was not possible to separate quantitatively the isotactic and atactic stereoisomers of polypropylene by means of fractionation from n-heptane. Orig. art. has: 2 charts, 1 table, and 3 formulas.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AN SSSR)

SUBMITTED: 26Jan63 DATE ACQ: 23Mar64 ENCL: 01

SUB CODE: CH NO REF SOV: 005 OTHER: 001

Card 2/2

FIRSOV, A.P.; TER-GAZARYAN, A.D.; CHIRKOV, N.M.

Polymerization of propylene in the presence of α-$TiCl_3$ - $Zn(C_2H_5)_2$. Part 2. Vysokom.soed. 6 no.2:357-361 F '64. (MIRA 17:2)

1. Institut khimicheskoy fiziki AN SSSR.

MESHKOVA, I.N.; TSVETKOVA, V.I.; CHIRKOV, N.M.

Termination reaction of a polymeric chain in polymerization of ethylene on TiCl AlEt Cl. Izv.AN SSSR.Ser.khim. no.2:386-388 F '64. (MIRA 17:3)

1. Institut khimicheskoy fiziki AN SSSR.

ACCESSION NR: AP4030349 S/0190/64/006/003/0377/0378

AUTHORS: Firsov, A. P.; Yeremina, I. V.; Chirkov, N. M.

TITLE: The effect of temperature on the crystalline-phase content of isotactic polypropylene

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 6, no. 3, 1964, 377-378

TOPIC TAGS: polypropylene, isotactic polymer, crystalline phase, atactic polymer, n-heptane, solubility in n-heptane, low temperature crystallization, catalyst, Ziegler-Natta catalyst, stereo-regularity

ABSTRACT: The investigation was conducted with polypropylene synthesized on the catalytic systems α - $TiCl_3$ - $Al(C_2H_5)_3$ and α - $TiCl_3$ - $Al(iso\text{-}C_4H_9)_3$. From this substance three fractions were prepared, one insoluble in boiling n-heptane, another soluble in boiling n-heptane but insoluble in cold n-heptane, and a third soluble in cold n-heptane. Samples of these fractions were subjected to x-ray spectroscopic study at 20C and -100C. No difference was found between the crystalline-phase contents in relation to temperature of samples insoluble in boiling

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ACCESSION NR: AP4030349

n-heptane or in those soluble in boiling n-heptane but insoluble in cold n-heptane. However, the fraction of polypropylene which was soluble in cold n-heptane revealed a 29% crystallinity at 20C and 45% at -100C. Defreezing reduced the 45% crystallinity to the 29% level. While it was known that his particular polypropylene fraction was a viscous liquid with an average molecular weight lower than that of the two other fractions, it was listed as an atactic polymer. The present investigation was able to demonstrate an increase in the crystalline phase of a low molecular weight isotactic propylene cooled to -100C, while its high molecular fractions remained unaffected. Orig. art. has: 1 table.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AN SSSR)

SUBMITTED: 23Jun62 DATE ACQ: 07May64 ENCL: 00

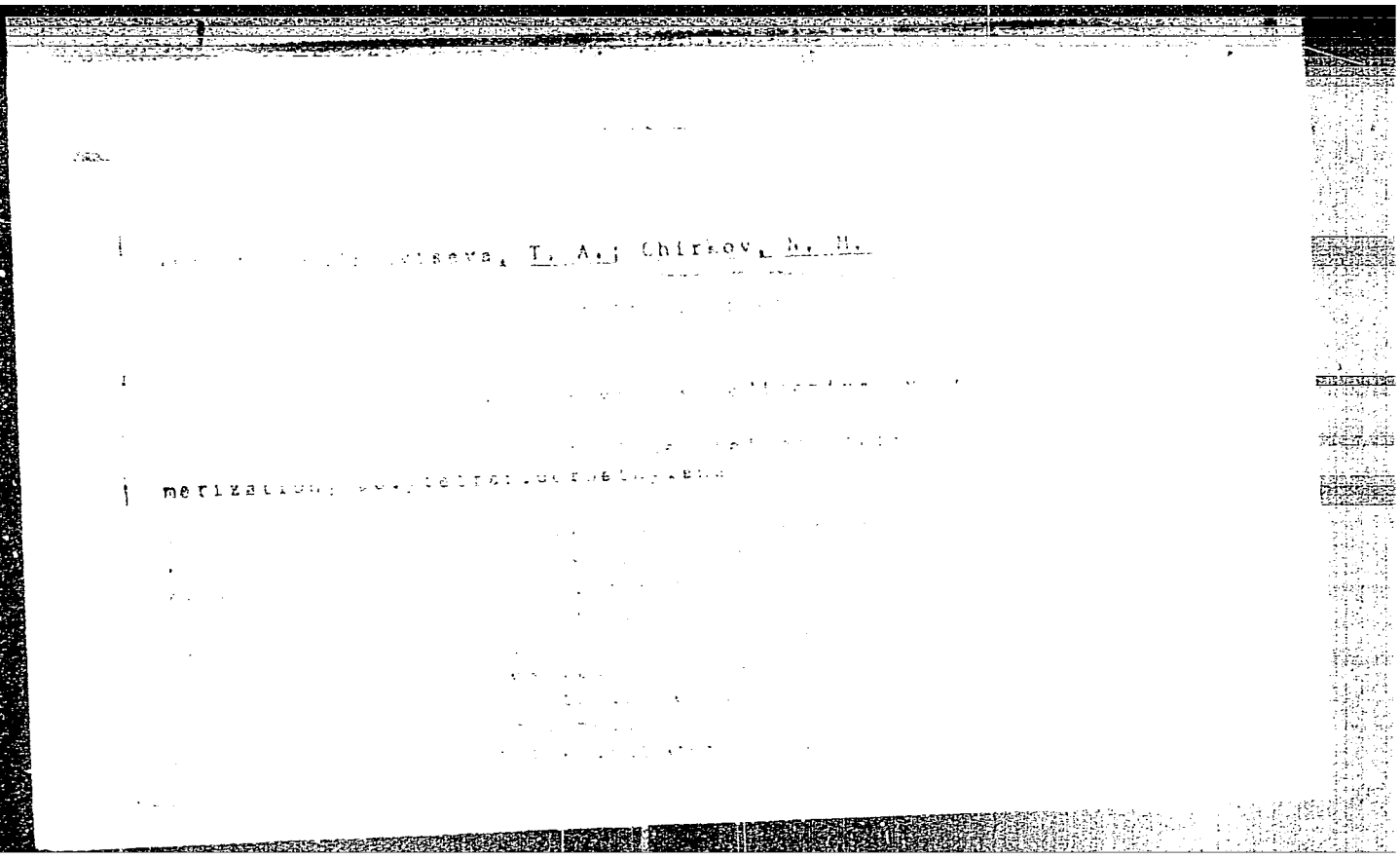
SUB CODE: CH NO REF SOV: 001 OTHER: 003

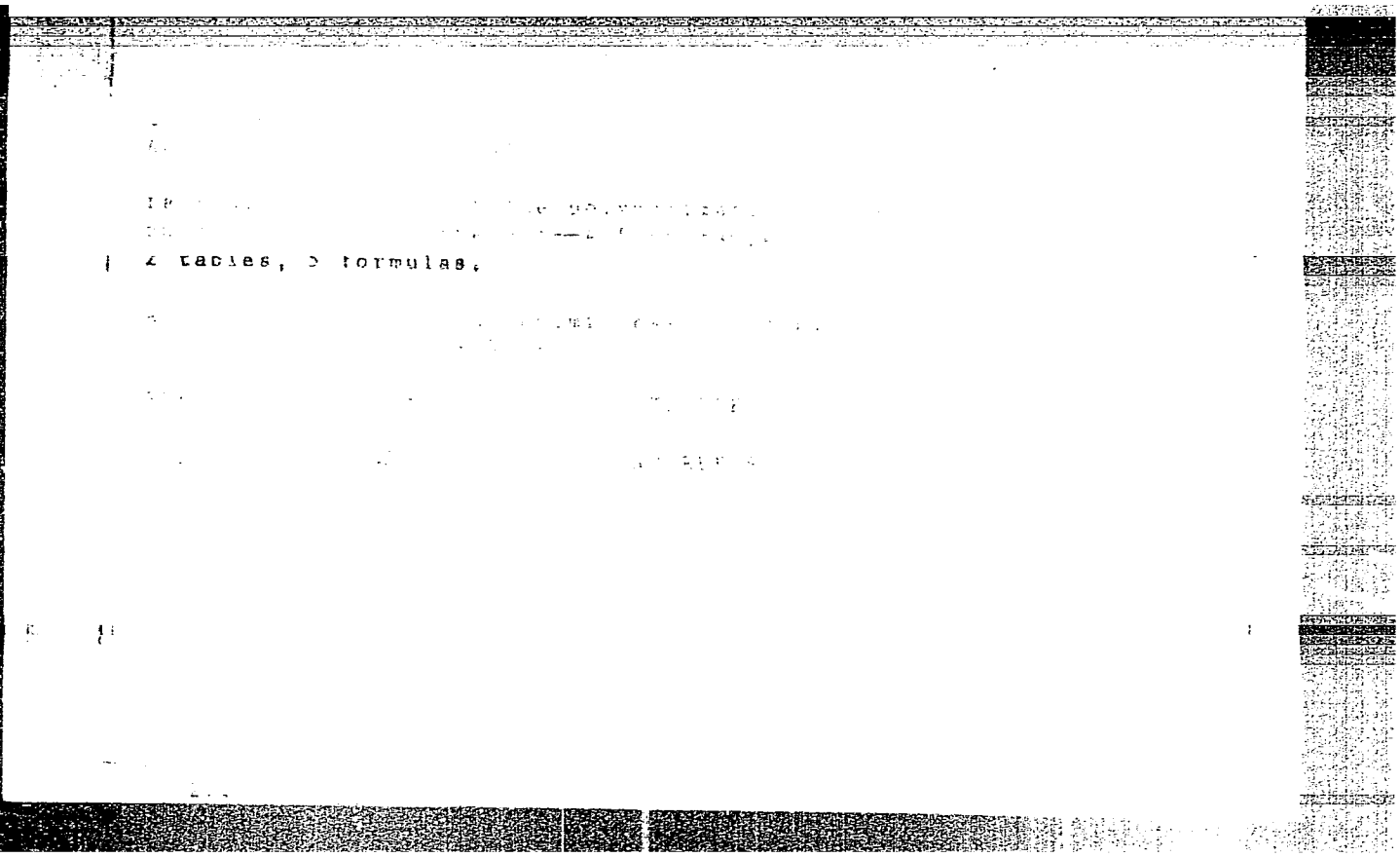
Card 2/2

FIRSOV, A.P.; TER-GAZARYAN, A.D.; CHIRKOV, N.M.

Polymerization of propylene in the presence of a-$TiCl_3$ - $Al(C_2H_5)_3$ - Zn $(C_2H_5)_2$. Vysokom. soed. 6 no.3:417-420 Mr'64. (MIRA 17:5)

1. Institut khimicheskoy fiziki AN SSSR.





PIROGOV, O.N.; CHIRKOV, N.M.

Polymerization of propylene in the presence of the catalytic system $TiCl_3$ + $Al(C_2H_5)_3$ modified by electron-donor compounds. Vysokom. soed. 7 no.3:491-496 Mr '65. (MIRA 18:7)

1. Institut khimicheskoy fiziki AN SSSR.

L [illegible]

ACCESSION NR: [illegible]

AUTHOR: [illegible] SHLYKOV, N. P.

TITLE: Determ[illegible] of reactions of [illegible] and limitat[illegible] of the [illegible] to the steady-state [illegible] zation of pro[illegible]

SOURCE: [illegible] Sarat. Khimicheskaya [illegible]

TOPIC TAGS: [illegible] merization, propylene, [illegible] tion rate

ABSTRACT: A [illegible] rm of a method for determining the rate constants of individual [illegible] reactions of initiation, propa[illegible] chain growth in [illegible] the steady-state catalytic polymer[illegible] in the system [illegible] -Mg . A quantitative characteri[illegible] tions of the [illegible] of the polymerization of propylene reactions of [illegible] of chain growth by diethylaluminum ethyla[illegible] and the number, initiation of the polymeric [illegible] curs rapidly in the [illegible] alpha-TiCl3-Mg . In contrast

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SUBMITTED

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Card 2/2

L 22428-65 Pc-4/Pr-4 RP
ACCESSION NR: S/0062/64/00

AUTHOR: Chirkov, N. M.

TITLE: ... catalyst ...

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, ...

TOPIC ...

ABSTRACT: ... $Al(C_2H_5)_2$ ... rate ... concentration at constant ... found ... retain a constant ... importance ... for the catalyst systems ...

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identical activation energy. Thus, while the

Card 2/3

ACCESS

specif[illegible] systems was not [illegible]
metal [illegible] included but the most probab[illegible]
catalyst [illegible] complex compound of catalyst [illegible]
coordin[illegible] [illegible] plays an active role [illegible]
and 1 fig.

ASSOCIATION [illegible] Khimicheskoy fiziki Akademii nauk SSSR (Inst
ical P[illegible] [illegible] SSSR)

SUBMIT[illegible] ENCL: 00 SUB[illegible]

NR REF [illegible] OTHER: 001

Card 3/3

KISSIN, Yu.V.; TSVETKOVA, V.I.; CHIRKOV, N.M.

Determination of the isotacticity of polypropylene by means of infrared spectroscopy. Vysokom.soed. 7 no.7:1288-1290 Jl '65. (MIRA 18:8)

1. Institut khimicheskoy fiziki AN SSSR.

L 00745-66 EWT(m)/EWP(j)/T RM

ACCESSION NR: AP5020961 UR/0190/65/007/008/1301/1305 34 27 B

AUTHOR: Raspopov, L. N.; Musayelyan, I. N.; Chirkov, N. M.; Yeremina, I. V.

TITLE: Mechanical properties of polyethylene produced in the presence of soluble catalytic systems

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 8, 1965, 1301-1305

TOPIC TAGS: solid mechanical property, polyethylene plastic, synthetic fiber, polymerization catalyst

ABSTRACT: Physico mechanical properties of polyethylene (I) obtained in the presence of soluble catalyst systems in chlorine-containing solvents, and of low pressure polyethylene (II) were compared over a wide range of molecular weights (I, $[\eta]$ = 0.7-12; M. W. 21,400-170,000; II, $[\eta]$ = 0.9-5.5). The strength of I exceeded that of II having the same $[\eta]$ value by 100-150 kgs/cm^2, indicating less branching and narrower molecular weight distribution in I. The crystallinity of different molecular weight samples of I decreased as cooling rate increased, and

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L 00745-66

ACCESSION NR: AP5020961

decreased somewhat with increase in molecular weight. At room temperature I was readily deformable in the $[\eta]$ = 1.25-1.40 range. Elongation at break decreased and polymer strength increased as molecular weight of I increased ($[\eta] > 1.40$). The polymer strength of I ($[\eta]$ = 2.5-4.6) decreased with increasing temperature, and elongation at break went through a maximum, indicating partial amorphization. The polymer strength of anisotropic samples of I increased and the elongation at break decreased as orientation temperature increased. Strengths of 90-100 kgs/mm^2 were attained at 80-90C compared to 50-60 kgs/mm^2 for II. Thus the polyethylene obtained by solution polymerization fulfills the strength and high orientation prerequisites for the manufacture of high strength fiber. Orig. art. has: 5 figures and 1 table

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AN SSSR)

SUBMITTED: 17Jul64 ENCL: 00 SUB CODE: MT, GC

NR REF SOV: 003 OTHER: 004

Card 2/2

FUSHMAN, E.A.; TSVETKOVA, V.I.; CHIRKOV, N.M.

Special features of catalytic polymerization of ethylene of the system $(C_2H_5)_2TiCl_2$ - Et_2AlCl and $(C_2H_5)_2TiCl_2$ - Et_3Al in an alkyl chloride medium. Dokl. AN SSSR 164 no.5:1085-1088 O '65. (MIRA 18:10)

1. Institut khimicheskoy fiziki AN SSSR. Submitted March 17, 1965.

NOVOKSHONOVA, L.A.; TSVETKOVA, V.I.; CHIRKOV, N.M.

Termination and initiation reactions of the polymeric chain in the polymerization of propylene on VCl_3 - $Al(iso\text{-}C_4H_9)_3$. Vysokom. soed. 7 no.5:898-901 My '65. (MIRA 18:9)

1. Institut khimicheskoy fiziki AN SSSR.

MATKOVSKIY, P.Ye.; ZAVOROKHIN, N.D.; CHIRKOV, N.M.

Kinetics of nonsteady state of polymerization of α-olefins. Vysokoem. soed. 7 no.9:1484-1488 S '65. (MIRA 18:10)

1. Institut khimii nefti i prirodnykh solej AN KazSSR i Institut khimicheskoy fiziki AN SSSR.

L 01153-66 EWT(m)/EPF(c)/EWP(j)/T RPL WW/RM

ACCESSION NR: AP5022004 UR/0286/65/000/014/0077/0077
678.742.2-134.23

AUTHOR: Dalin, M. A.; Bakhshi-Zade, A. A.o.; Kambarov, Yu. G. o.; Seidov, N. M. o.; Chirkov, N. M.; Tavetkova, V. I.; Lisitsyn, D. N.; Arutyunov, I. A.

TITLE: A method for producing an ethylene propylene elastomer. Class 39, No. 172969

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 14, 1965, 77

TOPIC TAGS: elastomer, ethylene, propylene, copolymerization, polymerization catalyst

ABSTRACT: This Author's Certificate introduces a method for producing an ethylene propylene elastomer by copolymerization of ethylene with propylene in a solvent in the presence of an organometallic Ziegler catalyst. Copolymerization is simplified by using liquid propylene as the solvent.

ASSOCIATION: none
SUBMITTED: 05Jul61 ENCL: 00 SUB CODE: MT
NO REF SOV: 000 OTHER: 000

Card 1/1 DP

L 9822-66 EWT(m)/EWP(j)/T RM

ACC NR: AP5026990 SOURCE CODE: UR/0020/65/164/005/1085/1088

AUTHOR: Fushman, E. A.; Tsvetkova, V. I.; Chirkov, N. M.; Dolgoplosk, B. A. (Academician)

ORG: IKHFANS

ORG: Institute of Chemical Physics, AN SSSR (Institut khimicheskoy fiziki AN SSSR)

TITLE: Peculiarities of ethylene polymerization catalysis with the use of the systems $(C_5H_5)_2TiCl_2$-Et_2AlCl and $(C_5H_5)_2TiCl_2$-Et_3Al in alkyl chlorides media

SOURCE: AN SSSR. Doklady, v. 164, no. 5, 1965, 1085-1088

TOPIC TAGS: ethylene, polymerization catalysis, titanium

ABSTRACT: The use of solvents containing an active Cl atom, such as $(CH_2Cl)_2$ EtCl, or CH_2Cl_2 for polymerization of C_2H_4 with the title systems (I) and (II), respectively, results in reactivation of the complexes that become practically inactive during the process. Kinetic curves for polymerization of C_2H_4 in various

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UDC: 542.973-541.6

solvents in the presence of (I) indicate that in C_6H_6 or PhCl the system is deactivated within 1 hour, owing to reduction of Ti(IV) to Ti(III). With (II) this reduction occurs very fast and there is practically no polymer formed. In the same conditions but with alkyl chlorides as solvents, the activity of (I) and (II) remains unchanged for long periods. As a result, the yield of polyethylene is much higher, no significant change of the molecular weight occurs, and the degree of branching remains low. The author thanks Academician A. N. Nesmeyanov for laboratory assistance. Orig. art. has: 4 figures and 2 tables. 44,55

SUB CODE: 07/ SUBM DATE: 25Feb65/ NR REF SOV: 007/ OTHER: 004

1/1

KUSHMAN, M.A.; SVETKOVA, V.I.; CHIRKOV, N.M.

Polymerization of ethylene in the presence of the system $(C_6H_5)_2 TiCl_2 - AlEt_3$ in 1,2-dichloroethane medium. Izv. AN SSSR. Ser. khim. no.11:2075-2077 '65. (MIRA 18:11)

1. Institut khimicheskoy fiziki AN SSSR.

MESHKOVA, I.N.; TSVETKOVA, V.I.; CHIRKOV, N.M.

Polymerization of ehtylene in the presence of titanium tetrachloride and aluminum alkyl halides. Izv.AN SSSR Ser.khim. no.1:77-83 '66. (MIRA 19:1)

1. Institut khimicheskoy fiziki AN SSSR. Submitted August 22, 1963.

L 36972-66 EWP(j)/ EWT(m) RM/WW
ACC NR: AP6008501 SOURCE CODE: UR/0062/66/000/001/0077/0083

37
B

AUTHOR: Meshkova, I. N.; Tsvetkova, V. I.; Chirkov, N. M.

ORG: Institute of Chemical Physics, Academy of Sciences, SSSR (Institut khimicheskoy fiziki Akademii nauk SSSR)

TITLE: Polymerization of ethylene in the presence of titanium tetrachloride and alkyl halides of aluminum

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 1, 1966, 77-83

TOPIC TAGS: catalytic polymerization, polymerization rate, ethylene, titanium compound, alkyl halide, aluminum compound

ABSTRACT: The authors study the relationship of the rates of accumulation of reduced titanium and rates of polymerization of ethylene in the presence of diethylaluminum chloride at 30C; molar ratios of $AlEt_2Cl$ to $TiCl_4$ of 0.6:1, 1.2:1, and 2.4:1; at a constant initial concentration of $AlEt_2Cl$ equal to $7.4 \cdot 10^{-3}$ M/liter. To elicit the effect of monoethylaluminum dichloride (which appears during reduction) on the catalytic properties of the system, experiments are carried out on the polymerization of ethylene on $TiCl_4$ and $AlEt_2Cl$ with additions of $AlEtCl_2$. The experiments demonstrated that, after the addition of $AlEtCl_2$ to the stable catalytic system formed upon the interaction of $TiCl_4$ and $AlEt_2Cl$, the activity of the catalyst noticeably drops. On the basis of these data the authors consider

UDC: 531.1+542.952

Card 1/2

L 36972-66
ACC NR: AP6008501

that the change in the composition of the cocatalyst (the replacement of $AlEt_2Cl$ by $AlEtCl_2$) is the basic cause for the decrease in the rate of polymerization in time. It was further found that in the catalytic systems forming in the reaction of $TiCl_4$ and organoaluminum compounds, there are other cocatalysts besides aluminum alkyls (titanium alkyls or complexes of $TiCl_4$ with titanium alkyls or aluminum alkyls) which, being adsorbed on the surface of the catalytic precipitate, form the most active centers of polymerization. Orig. art. has: 2 tables and 5 figures.

SUB CODE: 07/ SUBM DATE: 22Aug63/ ORIG REF: 009/ OTH REF: 006

Card 2/2

L 36177-66 EWT(m)/EWP(j)/T IJP(c) RM/DJ
ACC NR: AP6014267 (A) SOURCE CODE: UR/0153/66/009/001/0126/0127

AUTHOR: Gridunov, I. T.; Chirkov, N. M.; Pryakhina, S. F.; Lisitsyn, D. M.; Raspopov, L. N.

ORG: Rubber Technology Department, Moscow Institute of Fine Chemical Technology im. M. V. Lomonosov (Kafedra tekhnologii reziny, Moskovskiy institut tonkoy khimicheskoy tekhnologii)

TITLE: Use of atactic polypropylene[15] in Nairit rubbers[15]

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 9, no. 1, 1966, 126-127

TOPIC TAGS: polypropylene plastic, plasticizer, synthetic rubber, carbon black

ABSTRACT: In order to study the plasticizing properties of atactic low-molecular polypropylene, the latter was introduced into TM-70[5] rubber (containing 30 pts. by wt. of carbon black) in amounts from 5 to 50.0 pts. by wt. per 100 pts. by wt. of Nairit, and the physicomechanical properties of the mixes obtained were measured. It was found that the polypropylene is best introduced and distributed throughout the mixture if it is first heated to 70-80°C; adhesion of the rubber mix to metal surfaces in the course of its preparation and vulcanization is thus completely eliminated. A comparative study of TM-70 Nairit vulcanizates extended with 30 pts. by wt. of carbon black and containing 20 pts. by wt. of atactic polypropylene and 5.5 pts. by wt. of chlorinated paraffin showed that at this polypropylene content the Nairit rubber mixes

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L 36177-66

ACC NR: AP6014267

contain the lowest amount of the gel fraction; the cross-links density (M_c) of the vulcanizates decreases; the dynamic modulus E, internal friction modulus K_2 and heat production are reduced; the fatigue resistance in compressive deformation, tensile deformation and reverse bend is increased; and the resistance to thermooxidative processes and wear resistance are increased. It is concluded that atactic polypropylene should be used as a plasticizer for Nairit mixes. Orig. art. has: 2 tables.

SUB CODE: 11/ SUBM DATE: 28Jan64/ ORIG REF: 001

Card 2/2 mcp

S/169/61/000/005/028/049
A005/A130

AUTHORS: Chirkov, N.P., Shafer, Yu.G.

TITLE: The effect of air mass fronts on cosmic ray intensity and the role of the lower layers of the stratosphere

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 5, 1961, 12, abstract 5 G 98. (Tr. Yakutskogo fil. AN SSSR, Ser. fiz., 1960, no. 3, 78-83)

TEXT: Using the epoch superposition method, the authors investigated the effect of change in air mass (front effect) on the intensity of the hard component of cosmic rays. They studied 49 warm and 48 cold fronts that passed over Moscow in the period from 1953 to 1957. They show that incident to the passage of a warm front cosmic ray intensity decreases by (0.48 ± 0.10) %. The correlation for observed (δI) and theoretically calculated (δN) variations of intensity attains $r \simeq 0.93 - 0.98$. Incident to the passage of a cold front the increase in intensity amounts on an average to (0.53 ± 0.10) %, and the correlation coefficient for δI and

Card 1/2

δN also attains a high value. The influence of the lower layers of the stratosphere is expressed by a pronounced increase of the front effect on the intensity of the hard component. It is noted that there exists a marked correlation between the temperature contribution to the front effect and the relative number of sunspots.

N.K.

[Abstractor's note: Complete translation.]

Card 2/2

S/048/62/026/006/016/020
B125/B102

AUTHORS: Kuz'min, A. I., Krymskiy, G. F., Skripin, G. V., Chirkov, N. P., Shafer, G. V., and Shafer, Yu. G.

TITLE: Some results of investigations relating to variations of cosmic rays

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 6, 1962, 808-817

TEXT: The main results gained in the Yakutskaya laboratoriya (Yakutsk Laboratory) concerning various meteorological effects and primary variations are here reviewed, covering papers published by Kuz'min et al. in Tr. Yakutskogo filiala AN SSSR. Ser. fiz., no. 5, 1962. There are 12 figures and 1 table.

ASSOCIATION: Yakutskiy filial Sibirskogo otdeleniya Akademii nauk SSSR, Laboratoriya fizicheskikh problem (Yakutsk Branch of the Siberian Department of the Academy of Sciences USSR, Laboratory of Physical Problems)

Card 1/1

3.2410

4316R
S/203/62/002/003/020/021
I023/I250

AUTHOR: Chirkov, N.P.

TITLE: Variations in the intensity of cosmic rays due to occurrence of cyclones

PERIODICAL: Geomagnetizm i Aeronomiya, v.2, no.3, 1962, 570-571
Kratkie soobshcheniya (short communications)

TEXT: Seven cases of young cyclones passing Moscow during the period 1953-1955 were analyzed. Young cyclones are characterized by a non-uniform temperature distribution. The period of the passage of the cyclone was divided into 19 zones. The deviation of temperature from the average was found for each of the standard isobaric levels in these zones. The hourly readings of the global intensity of cosmic rays were analyzed by a similar method. The intensity decreases by 0.3-0.4% during the passage of the warm front, reaches a minimum before the cold front, and increases by 0.7-0.8% afterwards. The results were compared with theoretical values and a good agreement was found. Further analysis of the data indicates that the tempera-

Card 1/2

S/203/62/002/003/020/021
I023/I250

Variations in the intensity...

ture variations in the stratosphere are opposite to the variations in the troposphere, and are of the order of 3-4°. There is one figure, 4 references. The most important reference: L.I. Dorman, Variatsii kosmicheskikh luchei (Variations of cosmic rays) Gostekhirdat, 1957.

ASSOCIATION: Yakutskiy filial SO Akademii nauk SSSR

SUBMITTED: February 19, 1962

Card 2/2

KUZ'MIN, A.I.; KUKLIN, G.V.; SERGEYEV, A.V.; SKRIPIN, G.V.; CHIRKOV, N.P.; SHAFER, G.V.

Flare-up of cosmic ray intensity on May 4, 1960. Trudy IAFAN SSSR. Ser. fiz. no.4:132-137 '62. (MIRA 15:12)
(Cosmic rays)

CHIRKOV, N.P.; FILIPPOV, V.A.; SHAFER, G.V.

Eleven-year variations on cosmic ray intensity. Trudy IAFAN SSSR. Ser. fiz. no.4:122-131 '62. (MIRA 15:12)
(Cosmic rays)
(Sun spots)

LYSENKO, V.G., kand. ist. nauk; EPSHTEYN, A.I., kand. ist. nauk; CHIRKOV, N.P., kand. ist. nauk; KIYAN, Ye.A., kand. ist. nauk; PLUGATAREV, P.G., kand. ist. nauk; POBEDINA, Ye.N., kand. ist. nauk; DRONOVA, A.I., kand. ist. nauk; BLOKH, B.A., kand. ist. nauk; VORONINA, V.M., red.; LIMANOVA, M.I., tekhn. red.

[Outline history of the Kharkov Tractor Plant, 1931-1961] Ocherk istorii Khar'kovskogo traktornogo zavoda im. Ordonikidze, 1931-1961. Khar'kov, Khar'kovskoe knizhnoe izd-vo, 1962. 296 p. (MIRA 16:6)
(Kharkov--Tractor industry)

ACCESSION NR: AP4031633 S/0203/64/004/002/0290/0294

AUTHOR: Chirkov, N. P.

TITLE: Comparison of variations of the rigid component of cosmic rays in Bukhta Tiksi and Yakutsk

SOURCE: Geomagnetizm i aeronomiya, v. 4, no. 2, 1964, 290-294

TOPIC TAGS: cosmic particle, ecliptic plane, harmonic analysis, atmospheric radio sounding, stratospheric temperature, Forbush effect

ABSTRACT: Cosmic particles of high energy reaching high geographic latitudes form increasing angles with the ecliptic plane, while the same particles on the middle latitudes and in the equatorial belt form small angles with the ecliptic plane. The distribution of cosmic particles in space may be observed at stations on middle and high latitudes. Variations of cosmic-particle number are computed, by means of harmonic analysis, from data obtained by atmospheric radio sounding from ground level to a level of 50 mb. Variations at Tiksi are greater than in Yakutsk; the maximum at Tiksi occurred earlier

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ACCESSION NR: AP4031633

than at Yakutsk. Variations depend upon stratospheric temperature changes. The secular change of amplitude rate occurs differently at both stations, but the secular rates of Forbush effect coincided at both stations, except in 1959. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: Institut kosmicheskikh issledovaniy i aeronomii, YaF SO AN SSSR (Institute of Cosmic Investigations and Aeronomy, YaF SO AN SSSR)

SUBMITTED: 11Oct63 DATE ACQ: 30Apr64 ENCL: 00

SUB CODE: AS NO REF SOV: 006 OTHER: 005

Card 2/2

23101-65 EWT(1)/EWG(v)/FCC/EEC-4/EEC(t)/EWA(h) Po-4/Pe-5/Po-4/Pae-2/Peb/Pi-4

ACCESSION NR: AP5002101 SW/WE S/0048/64

AUTHOR: [illegible], A. I.; Krymskiy, G. F.; Krivoshapkina, T. A.; [illegible]

TITLE: [illegible] of cosmic rays in an interplanetary field

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, [illegible]

TOPIC TAGS: cosmic ray flux, chromospheric flare, [illegible] particle, [illegible], interplanetary [illegible]

ABSTRACT: The flux of cosmic rays depends upon the state of [illegible] A reflecting magnetic field can exist [illegible] outside the solar orbit; this field does not [illegible] tion of solar particles. The occurrence of [illegible] phases of Forbush decreases indicates that solar cosmic rays can reach the earth freely. The Forbush effect is evident in a space which is separatedfrom other space by an envelope. In this series

Card 1/3

23401-65
ACCESSION NR: AP5002101

gated space solar cosmic rays may move away from or toward the sun. This segregated space is characterized by a decrease cosmic rays. The energy spectrum of particle variations with ... is characterized by ... to 4.5. Variations with ... the linear solar ... of variation is greater in the polar regions than at ... The delay in the Forbush decrease on the earth as compared with ... solar ... flares obtained by experiment ... expansion of the magnetic shell of the segregated ... locity of ... cm sec⁻¹. This expansion may be ... motion of the radial interplanetary magnetic field. ... galactic cosmic rays is less in the vicinity of the ... than in the free flux in the galaxy. An intensity gradient of ... mic rays must exist at the boundary between the solar system and the unperturbed galaxy. Orig. art. has: 1 figure, 1 table, ... formulas.

ASSOCIATION: Institut kosmofizicheskikh issledovaniy i aeronomii Yakutskogo filiala Sibirskogo otdeleniya Akademii nauk

Card 2/3

L 23401-65
ACCESSION NR: AP5002101

(Institute of Space Physics Research and Aeronomy of the Yakutsk Branch of Siberian Division, Academy of Sciences, SSSR)

SUBMITTED: 00 ENCL: 00 SUB CODE: AA

NO REF SOV: 008 OTHER: 004

Card 3/3

L 47318-65 EEC-4/EWG(v)/EWA(h)/EEC(t)/EWT(l)/FCC Pi-4/Pe-5/Po-4/Pq-4/Pae-2/Pab
GW/GS

ACCESSION NR: AT5006967 UR/0000/64/000/000/0057/0063

38
36
B+1

AUTHOR: Chirkov, N. P.

TITLE: Meteorological effects of cosmic rays during magnetic storms

SOURCE: AN SSSR. Yakutskiy filial. Institut kosmofizicheskikh issledovaniy i aeronomii. Geo- i geliofizicheskiye effekty v kosmicheskikh luchakh i polyarnykh siyaniyakh (Geo- and heliophysical effects in cosmic rays and auroras). Moscow, Izd-vo Nauka, 1964, 57-63

TOPIC TAGS: cosmic ray, magnetic storm, geomagnetism, atmospheric temperature, Forbush decrease, cosmic ray neutron component

ABSTRACT: A study has been made of the meteorological effects of cosmic rays during magnetic storms. During the period July 1957 - December 1959 there were 112 magnetic storms. Only the neutron component was used in evaluating the effectiveness of these storms. About 80% were accompanied by an increase in cosmic ray intensity and about 50% by clearly expressed Forbush decreases. Data of cosmic ray intensity variations (corrected for pressure and temperature) were used for five stations in the Soviet Union. A magnetic storm was considered effective if it was accompanied by a neutron intensity of not less than 1%. There were 59 such storms; 46 of these

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were selected for final analysis and their characteristics are given in a table. It is shown that the atmospheric temperature affects the value of the Forbush decrease. As an average for the 46 storms there was a warming of the atmosphere by 0.6-0.8C after commencement of a magnetic storm and then a cooling by approximately this same value. In a further analysis, magnetic storms for which an allowance for temperature decreases the decrease in cosmic ray intensity by not more than 0.1% and storms for which it increases this effect by more than 0.3% were grouped. It is shown that there can be two types of changes in temperature corrections and when this is taken into account the entire picture of the Forbush decrease can change considerably. A detailed picture was then obtained by averaging temperature data at standard isobaric surfaces at Yakutsk. It is noted that when temperature variations occur in the troposphere they may not be observed in the lower stratosphere, but this may be due only to the averaging method used. Average temperature corrections for a number of stations in the Soviet Union are given. It is noted further that the processes occurring in the earth's atmosphere at the time of magnetic storms have a quite complex character, apparently dependent on latitude. Evidence thus indicates that the earth's atmosphere changes the picture of the Forbush decrease somewhat, influencing its magnitude and its duration. Atmospheric influence must therefore be taken into account [illegible] the intensity of the [illegible] accompanying temperature changes may give rise to cyclonic processes.

Card 2/3

L 47318-65
ACCESSION NR: AT5008967

author wishes to thank A. I. Luz'min for valuable advice and discussion
art. has: 4 figures and 2 tables.

ASSOCIATION: Institut kosmofizicheskikh issledovaniy i aeronomii SO AN SSSR (Yakutskiy filial, AN SSSR) (Institute of Space Research and Aeronomy, Yakutsk Branch, AN SSSR)

SUBMITTED: [illegible] ENCL: 00 SUB CODE: [illegible]

NO REF SOV: 004 OTHER: 000

Card 2/3

L 41073-65 EWG(j)/EWT(l)/EWT(m)/EWG(v)/ROC/EEC-4/EEC(t)/T/EWA(h) Pc-4/Pe-5/Pq-4/
Pae-2/Peb/Pi-4 IJP(c) GS/GW
ACCESSION NR: [illegible] S/0000/64/000/000 [illegible]

AUTHOR: [illegible] A. I.; Danilov, A. A.; Chirkov, N. P.

TITLE: [illegible] variations during the passage of cyclones

SOURCE: [illegible] filial. Institut kosmofizicheskikh issledovaniy i aeronomii. Fizicheskiye effekty v kosmicheskikh [illegible]
[illegible] physical effects in cosmic space [illegible]

TOPIC TAGS: [illegible] solar ray variation, cyclone [illegible]
[illegible] meteorology, cosmic ray [illegible]

ABSTRACT: [illegible] of effects of cosmic rays [illegible]
[illegible] their initial stage [illegible]
[illegible] data of the synoptic situation [illegible]
[illegible] west if identical cases of the passage [illegible]
[illegible] the center of the cyclone was situated [illegible]
[illegible] experiment data were analyzed with the method [illegible]
[illegible] Enclosure shows the mean [illegible]

Card 1/2

L 41073-65
ACCESSION NR: AT5006968

neutron [illegible] of the earth's surface and various [illegible]
It can be [illegible] passage of cyclones the results [illegible]
iences [illegible] the variations. At the time [illegible]
leading [illegible] its component [illegible]
experience [illegible] of the time of passage [illegible]
perience [illegible] charges, approximate [illegible]
neutron [illegible]
The barom[illegible] from the effect [illegible]
cyclone [illegible] essential value for [illegible]
at Yak[illegible] neutron component, the effect [illegible]
can be [illegible] meteorological effect, for [illegible]
of the [illegible] to temperature changes. The [illegible]
recorded [illegible] decrease of 5°, does not [illegible]
due to changes [illegible] temperature. It is concluded that
tions during [illegible] values agree with the theory [illegible]
fects based on [illegible] model of generation of the cosmic [illegible]
and that the main [illegible] effects of the neutron component [illegible]
essentially [illegible] effect. Orig. art. has: 2 figures.

Card 2/4

L 41073-65
ACCESSION NR: [illegible]

ASSOCIATION: [illegible] Kosmofizicheskikh issledovaniy i aeronomii [illegible] Institute of Space Research and Aeronomy, Yakutsk [illegible] AN SSSR)

SUBMITTED: [illegible] ENCL: 01 [illegible]

NO REF SOV: [illegible] OTHER: 001

Card [illegible]

KUZ'MIN, A.I.; KRYMSKIY, G.F.; KRIVOSHAPKIN, P.A.; SKRIPIN, G.V.; CHIRKOV, N.P.; SHAFER, G.V.

Cosmic ray modulation by the interplanetary magnetic field. Izv. AN SSSR Ser. fiz. 28 no.12:1997-2000 D '64 (MIRA 18:2)

1. Institut kosmofizicheskikh issledovaniy i aeronomii Yakutskogo filiala Sibirskogo otdeleniya AN SSSR.

CHIRKOV, N.P.; KUZ'MIN, A.I.; KRYMSKIY, G.F.

Asymmetry of cosmic ray variation. Izv. AN SSSR Ser. fiz. 28 no.12:2001-2004 D'64 (MIRA 18:2)

1. Institut kosmofizicheskikh issledovaniy i aeronomii Yakutskogo filiala Sibirskogo otdeleniya AN SSSR.

ALTUKHOV, A.M.; KUZ'MIN, A.I.; KRYMSKIY, G.F.; SKRIPIN, G.V.; CHIRKOV, N.P.

Rotation of the anisotropy of cosmic rays. Izv. AN SSSR Ser. fiz. 28 no.12:2009-2011 D '64 (MIRA 18:2)

1. Institut kosmofizicheskikh issledovaniy i aeronomii Yakutskogo filiala Sibirskogo otdeleniya AN SSSR.

L 11772-66 EWT(l)/EWT(m)/FCC/T/EWA(h) IJP(c) GW

ACC NR: AT6003527 SOURCE CODE: UR/3184/65/000/007/0135/0139

AUTHOR: Chirkov, N.P.; Krymskiy, G.F.; Kus'min, A.I.; Skripin, G. V. 37

ORG: none

TITLE: Variations of cosmic rays and oscillations of the magnetosphere

SOURCE: AN SSSR. Mezhduvedomstvennyy geofizicheskiy komitet. Kosmicheskiye luchi, no. 7, 1965, 135-139

TOPIC TAGS: galactic cosmic ray, magnetic storm, geomagnetic threshold, Forbush decrease, lunar diurnal variation, energy spectrum

ABSTRACT: Some difficulties occur in investigating geomagnetic changes in galactic cosmic rays. The intensity of cosmic rays is subject to great fluctuations of sudden commencement during strong magnetic storms. The spectrum of galactic particles is only slightly sensitive to changes of geomagnetic thresholds compared to solar particles, and the spectrum becomes harder during the Forbush decrease. These phenomena indicate that the increase of cosmic-ray intensity occurs isotropically and anisotropically, and its maximum amplitude is found at middle latitudes. This period is associated with weak geomagnetic disturbances. Statistical data prove that the change of cosmic-ray intensity during the Forbush decrease occurs with the same probability at both high and low latitudes. This fact contradicts the assumption that the increase depends only upon the magnetic thresholds. The problem of the

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L 11772-66

ACC NR: AT6003527

lunar diurnal variations is also unresolved because these variations do not have a tidal origin. They indicate a 27-day modulation of solar diurnal variations. The conclusion may be drawn that the magnetosphere plays a small role in variations of galactic cosmic rays, but its influence is significant for solar cosmic rays with soft energy spectrum. Orig. art. has: 5 figures and 1 table. [EC]

SUB CODE: 03/ SUBM DATE: none/ ORIG REF: 011/ OTH REF: 007/ ATD PRESS 4178

Card 2/2

L 1897-66 EWT(1)/FCC/EWA(h) GW/GS

ACCESSION NR: AT5022832 UR/0000/65/000/000/0201/0205

AUTHOR: Chirkov, N. P.

TITLE: Variations of ionization bursts

SOURCE: Vsesoyuznoye soveshchaniye po kosmofizicheskomu napravleniyu issledovaniy kosmicheskikh luchey. 1st, Yakutsk, 1962. Kosmicheskiye luchi i problemy kosmofiziki (Cosmic rays and problems in cosmophysics); trudy soveshchaniya. Novosibirsk, Redizdat Sib. otd. AN SSSR, 1965, 201-205

TOPIC TAGS: mu meson, cosmic ray intensity, cyclone, stratosphere

ABSTRACT: Since December 1957, cosmic rays have been recorded in Tiksi Bay with an ASK-2-34 ionization chamber. The meson component is recorded together with the ionization bursts. In all, about 10,300 bursts have been recorded in 4 years of operation. The integrated spectrum of the bursts for each of the 4 years shows the presence of the 4-year rhythmicity observed earlier in the meson component. For the sake of a more detailed analysis of the observed variations in the number of bursts, the latter are considered on a monthly scale. Secular variations were observed, and variations of several years were found to repeat those of the meson component. In an attempt to account for the results, the

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L 1897-66

ACCESSION NR: AT5022832

15

authors analyzed the variations in the number of bursts during the passage of cyclones: since the latter are violent atmospheric phenomena, the variations should be affected if they are connected with the atmosphere. It is found that the variations in the number of bursts at ground level are dependent on the temperature variations in the lower stratosphere; this being the case, in order to explain the secular variations, it is postulated that the temperature undergoes secular variations in the upper atmosphere. Preliminary analysis of aerological material confirms this hypothesis. "In conclusion, I thank A. I. Kuz'min and D. D. Krasil'nikov for participating in a review of the article, and M. Samusikova and M. Timofeyev for assistance in processing the data." Orig. art. has: 5 figures and 1 table.

ASSOCIATION: Institut kosmofizicheskikh issledovaniy i aeronomii Yakutskogo filiala SO AN SSSR (Institute of Cosmic Physics Research and Aeronomy, Yakutsk Branch, SO AN SSSR)

44,55

SUBMITTED: 29Oct64 ENCL: 00 SUB CODE: ES, AA

NO REF SOV: 004 OTHER: 001

Card 2/2

CHIRKOV, N.P.; KUZ'MIN, A.I.

Asymmetry in cosmic ray intensity variation. Izv. AN SSSR.Ser.fiz.
29 no.10:1904-1906 O '65. (MIRA 18:10)

1. Institut kosmofizicheskikh issledovaniy i aeronomii Sibirskogo otdeleniya AN SSSR.

L 45143-66 EWT(1)/FCC GW

ACC NR: AR6027538 SOURCE CODE: UR/0313/66/000/005/0043/0043

AUTHOR: Kuz'min, A. I.; Krymskiy, G. F.; Krivoshapkin, P. A.; Skripin, G. V.; Chirkov, N. P.; Shafer, G. V.

52
B

TITLE: The nature of cosmic ray variations

SOURCE: Ref. zh. Issledovaniye kosmicheskogo prostranstva, Abs. 5.62.292

REF SOURCE: Sb. Issled. po geomagnetizmu i aeron. M., Nauka, 1966, 111-118

TOPIC TAGS: cosmic ray, cosmic ray variation, magnetic field, interplanetary magnetic field, magnetosphere

ABSTRACT: A review of studies is presented on cosmic ray variations caused by changes in the magnetosphere, the temperature of the upper atmosphere, modulation effects, and flare effects. The role of the interplanetary magnetic field in the generation of cosmic ray variations is emphasized and the characteristics of the field are evaluated. [Translation of abstract] [FM]

SUB CODE: 03, 04/ SUBM DATE: none/

Card 1/1

L 04886-67 EWT(1)/EWT(m)/FCC LJP(c) GD/GW

ACC NR: AT6027221 SOURCE CODE: UR/0000/66/000/000/0111/0118

AUTHOR: Kuz'min, A. I.; Krymskiy, G. F.; Krivoshapkin, P. A.; Skripin, G. V.; Chirkov, N. P.; Shafer, G. V.

ORG: none

TITLE: The nature of cosmic ray variations

SOURCE: AN SSSR. Sibirskoye otdeleniye. Sibirskiy institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln. Issledovaniya po geomagnetizmu i aeronomii (Studies in geomagnetism and aeronomy). Moscow, Izd-vo Nauka, 1966, 111-118

TOPIC TAGS: cosmic ray intensity, solar cycle, magnetic field

ABSTRACT: A brief survey is given of available data concerning the variation of cosmic ray intensity and the effect responsible for this variation. The effects of fluctuations of the magnetosphere and temperature fluctuations in the upper atmosphere on cosmic ray variations are examined. Cosmic ray flares with energies up to 10 Bev, and their association with Forbush decreases are discussed in relation to their effect on cosmic ray variations. The 11-year variations, 27-day variations, and solar diurnal and annual variations are shown to be closely interrelated, and to have modulation of galactic cosmic rays by the radial inter-

Card 1/2

L 04885-67

ACC NR: AT6027221

D

planetary field as their common source. All existing observations on the variation of cosmic ray intensity are seen to indicate the existence of an external (with respect to the sun) radial interplanetary magnetic field and the predominant contribution of the dynamic effects of the field's disturbances to the modulation of galactic particles. An important feature of the field's configuration (deduced from observations of the variation of cosmic ray intensity, and also from other unrelated data) is its oblateness with respect to the plane of the ecliptic or the solar equatorial plane.

SUB CODE: 04/ SUBM DATE: 25Dec65/ ORIG REF: 026/ OTH REF: 009/

Card 2/2 ea/a

ACC NR: AP7008935 SOURCE CODE: UR/0203/66/006/005/0920/0921

AUTHOR: Chirkov, N. P.

ORG: Institute of Space Physics Investigations and Aeronomy, Yakutsk Affiliate, Siberian Department, AN SSSR (Institut kosmofizicheskikh issledovaniy i aeronomii Yakutskogo filiala SO AN SSSR)

TITLE: Annual variations of cosmic ray intensity

SOURCE: Geomagnetizm i aeronomiya, v. 6, no. 5, 1966, 920-921

TOPIC TAGS: cosmic ray intensity, solar corona

SUB CODE: 04,03

ABSTRACT:

In order to explain the nature of the annual variations in the intensity of cosmic rays it is necessary to take the following facts into account. It is known that the equatorial plane of the sun is inclined to the plane of the ecliptic by 7°15'; in spring this angle is positive and in autumn is negative. If the distribution of active formations on the sun, and this means disturbances in the corona and supercorona, are symmetrical relative to the solar equatorial plane, in spring the earth will be situated somewhat to the south of the central region (if it is assumed to be situated in the plane of the solar equator) of propagation of the disturbance, and in autumn -- to the north. The solar corona, and this means the principal modulating region, are deflected toward the south and therefore the earth is "connected" for the most part with the active formations of the northern hemisphere of the sun. This complicates the simple picture and can explain qualitatively the winter mini-

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UDC: 523.165

0929 1776

ACC NR: AP7008935

mum in the annual wave of cosmic ray intensity and the large amplitude for stations of the southern hemisphere in comparison with northern stations, since the latter will be projected onto the periphery of the modulating region (in winter), and the first — onto its central region. Accordingly, the central modulating region is detected later by southern stations than by northern stations. [JPRS: 38,677]

Card 2/2

CHIRKOV, N.S.; DEMICHEV, A.D.

Laying track with separate fastenings. Put' i put.khoz. no.6:17-18 Je '57. (MIRA 10:7)

1. Glavnyy inshener Putevoy mashinnoy stantsii-5 (for Chirkov).
2. Nachal'nik normativnoy stantsii (for Demichev).
(Railroad--Track)

CHIRKOV, N.S., elektromekhanik

Modified diagram for thermal line-cell circuit-breakers. Avtom., telem. i sviaz' 2 no.9:30 S '58. (MIRA 11:10)

1.Izmeritel'naya gruppa 1-y distantsii signalizatsii i svyazi Tashkentskoy dorogi.
(Electric circuit-breakers) (Railroads--Signaling)

CHIRKOV, N.S.

Eliminating the vertical unevenness of rails on continuous tracks. Put' put.khoz. 8 no.2:34-35 '64. (MIRA 17:3)

1. Starshiy inzh. Vsesoyuznogo nauchno-issledovatel'skogo instituta zheleznodorozhnogo transporta Ministerstva putey soobshcheniya.

CHIRKOV, N.S.

Decrease the number of rail joints. Put' i put. khoz. 8 no.11: 32-33 '64 (MIRA 18:2)

1. Starshiy inzh. Vsesoyuznogo nauchno-issledovatel'skogo instituta zheleznodorozhnogo transporta Ministerstva putey soobshcheniya.

CHIRKOV, N.S., inzh.

Welding of switches. Zhel. dor. transp. 47 no.9:70-73 S '65.
(MIRA 18:9)

GLADILIN, A.A.; GLUKHOV, D.S.; YEREMIN, V.I.; ZVEREVA, N.F.; LAPIN, K.N.; MAMONOVA, A.S.; MARTYNOV, M.K.; CHIRKOV, N.Ye.; MIKHAL'CHIKOV, P.I.; POLYACHKIN, M.A.,red.; ANTONOV, V.P., tekhn. red.

[Economy of Penza Province; a statistical collection] Narodnoe khoziaistvo Penzenskoi oblasti; statisticheskii sbornik. Penza, 1958. 190 p. (MIRA 11:11)

1. Penzenskaya oblast'. Statisticheskoye upravleniye.(for all except Mikhal'chikov and Antonov).

(Penza Province--Statistics)

CHIRKOV, P., general-leytenant

Operativeness of actions and the language of command. Voen. vest. 41 no.4:56-58 Ap '62. (MIRA 15:4)
(Russia--Army--Officers)

CHIRKOV, P.F.

Mekhanizatsiia mezhdunariadnoi obrabotki tabaka (Mechanization of inter-row processing of tobacco). Krasnodar, Sovetskaia Kuban', 1951. 37p.

SO: Monthly List of Russian Accessions, Vol. 6, No. 3, June 1953

SEREDENKO, M.M., doktor ekon. nauk; ALEKSANDROVA, V.P.; KUGUSHEV, M.F. [Kuhushev, M.F.]; SHEVCHENKO, Ya.O.; GLAMAZDA, A.D.[Hlamazda, A.D.]; ZABORSKAYA, Z.M.[Zabors'ka, Z.M.]; KHOTIMCHENKO, M.M. [Khotymchenko, M.M.]; YATSKOV, V.S.; MEDVEDEV, V.M.[Medvediev, V.M.]; CHIRKOV, P.V.[Chyrkov, P.V.]; KHARCHENKO, P.F.; SOTCHENKO, Z.Ya.; PROFATILOVA, L.M.[Profatylova, L.M.]; MAULIN, M.O.; GORELIK, L.Ye.[Horelik, L.IE.]; RIZHKOV, I.I. [Ryzhkov, I.I.]; ZHEREBKIN, G.P.[Zherebkin, H.P.]; KHRAMOV, O.O.; LANDYSH, B.O., red.; ROZENTSVEYG, Ye.N.[Rozentsveih, IE.N.], tekhn. red.

[Economic efficiency of capital investments and the introduction of new machinery in industry]Ekonomichna efektyvnist' kapital'nykh vkladen' i vprovadzhenniia novoi tekhniky u promyslovosti. Kyiv, Vyd-vo Akad. nauk URSR, 1962. 260 p. (MIRA 16:2)

1. Akademiya nauk URSR, Kiev. Instytut ekonomiky.
(Capital investments) (Technological innovations)

CHIRKOV, S.K.

Deceased

Metallurgy

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S/153/60/003/004/010/040/XX
B023/B054

AUTHORS: Chirkov, S. K., Braynina, Kh. Z., Kochanova, O. M.

TITLE: Use of Polyvinyl Alcohol in Polarography

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1960, Vol. 3, No. 4, pp. 600 - 603

TEXT: The authors studied the effect of polyvinyl alcohol on the reduction of Cu-, Cd-, and Zn ions on a dropping mercury electrode from a chloride ammonium solution. The investigation of the applicability of polyvinyl alcohol for this purpose was suggested by Professor A.A. Tager, who is thanked by the authors. The studies were conducted on a visual polarograph of the УФАН (UFAN) system. The amperage was measured with a reflecting galvanometer of the type М-21 (M-21). The potential of the mercury electrode was measured by the compensating method referred to a saturated calomel electrode. This calomel electrode, which was connected with the electrolyzer by a low-resistance electrolytic bridge, served as anode. The mercury was previously distilled in vacuo. All solutions

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were prepared with doubly distilled water. The salts of the minerals studied (copper-, cadmium-, and zinc sulfates) were twice recrystallized from the doubly distilled water. After previous swelling in a small amount of water, the polyvinyl alcohol(molecular weight 25,000) was dissolved. The cations were polarographed on a chloride-ammonium background (1.5N NH_4Cl; 1.5N NH_4OH) with an addition of 4.0 g of crystalline sodium sulfite on 100 ml of solution. The ammonia was distilled in a glass apparatus. Ammonium chloride and sodium sulfite were recrystallized from doubly distilled water. Figs. 1-3 show the results. The upper curve (Fig.1) has two maxima whose character has not yet been determined. Polyvinyl alcohol suppresses current maxima on all curves studied. A table shows that, in the presence of polyvinyl alcohol, the reduction of copper- and zinc ions on the mercury electrode proceeds irreversibly. The reduction of cadmium is not so much influenced by polyvinyl alcohol. There are 3 figures, 1 table, and 5 references: 2 Soviet and 2 US.

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ASSOCIATION: Ural'skiy gosudarstvennyy universitet im. A. M. Gor'kogo Kafedra analiticheskoy khimii (Ural State University imeni A. M. Gor'kiy, Department of Analytical Chemistry)

SUBMITTED: November 21, 1958

Card 3/3

KULIKOV, Aleksandr Nikolayevich, inzh.; PISANNIKOV, G.P., inzh.; CHIRKOV, S.L., retsenzent; VOLCHONOK, I.I., red.; TYUKOVIN, I.N., red.izd-va; RIDNAYA, I.V., tekhn. red.

[Safety measures in the operation of marine power plants; manual for inland navigation crews]Tekhnika bezopasnosti pri ekspluatatsii sudovykh silovykh ustanovok; posobie dlia plavaiushchego sostava sudov rechnogo flota. Izd.2., perer. i dop. Moskva, Izd-vo "Rechnoi transport," 1962. 163 p. (MIRA 16:2)

(Marine engineering—Safety measures)

CHIRKOV, Sergey Leonidovich; KUZ'MIN, V.G., red.; LOBANOV, Ye.M., red. izd-va; RIDNAYA, I.V., tekhn. red.

[Guide to safety measures for marine engine and steering gear operators on ships of the river fleet] Pamiatka po tekhnike bezopasnosti dlia motoristov-rulevykh sudov rechnogo flota. Moskva, Izd-vo "Rechnoi transport," 1962. 55 p. (MIRA 16:6)

(Inland navigation--Safety measures)
(Marine engineering--Safety measures)

CHIRKOV, S.V.

Achievement of the cable-laying unit. Transp. stroi. 13 no.7:39-40 Jl '63. (MIRA 16:9)
(Electric lines)

PROTOD'YAKONOV, Mikhail Mikhaylovich, prof., doktor tekhn. nauk;
CHIRKOV, Sergey Yefimovich; TEDER, R.I., otv. red.;

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PROTOD'YAKONOV, Mikhail Mikhaylovich; KOYFMAN, Mikhail Il'ich; CHIRKOV, Sergey Yefimovich; KUNTYSH, Mikhail Filimonovich; TEDER, Rolland Iogannesovich

[Strength certificate of rocks and methods of determining it] Pasporta prochnosti gornykh porod i metody ikh opredeleniia. [By] M.M.Protod'iakonov i dr. Moskva, Nauka, 1964. 76 p. (MIRA 18:1)

1. Moscow. Institut gornogo dela im. A.A.Skochinskogo.

CHIRKOV, V.A., aspirant; OSTASHKO, F.I., kand. biolog. nauk, nauchnyy rukovoditel'

Motility of the uterus during insemination. Veterinariia 42 no.7:72-74 Jl '65. (MIRA 18:9)

1. Nauchno-issledovatel'skiy institut zhivotnovodstva lesostepi i Poles'ya Ukrainskoy SSR.

CHIRKOV, V.A., inzhener.

Calculating the width of tree belts for snow protection. Vest.TSNII MPS no.2:41-44 Mr '57. (MIRA 10:4)
(Railroads--Snow protection and removal)

USSR / Soil Science. Cultivation. Melioration. Erosion. J-5

Abs Jour: Ref Zhur-Biol., No 8, 1958, 34446.

Author : Chirkov, V. A.
Inst : All-Union Scientific Research Institute of Railroad Transportation.
Title : On the Problem of Application of Arboreal Vegetation in the Fight Against Landslide.

Orig Pub: Tr. vses. n.-i. in-ta zh.-d. transp, 1957, vyp. 129, 150-171.

Abstract: Arboreal vegetation, as compared with other engineering methods, appears to be simple, effective and the cheapest method against landslide. Described are the results of the research by the All-Union Scientific Research Institute of Railroad Transportation. Depending on the purpose of

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USSR / Soil Science. Cultivation. Melioration. Erosion. J-5

Abs Jour: Ref Zhur-Biol., No.8, 1958, 34446.

Abstract: the planting, as well as on the local conditions of the soil, it is recommended to select the composition of wood plantings, their disposition in relation to each other, the optimum distance between them, and the system of soil cultivation.

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CHIRKOV, V.A.

CHIRKOV, V.A.

Protective fences on section having young tree plantings. Put' i put. khoz. no.1:32-33 Ja '58. (MIRA 11:1)

1. Starshiy nauchnyy sotrudnik laboratorii zashchitnykh lesonasazhdeniy TSentral'nogo nauchno-issledovatel'skogo instituta.
(Railroads--Snow removal and protection)

CHIRKOV, V.A.

Improvement cutting of snow protection plantations. Put' i put. khoz. no.12:30-33 D '59. (MIRA 13:4)
(Railroads—Snow protection and removal)

CHIRKOV,V.A.

Snow drifts and their effect on the development of tree shelterbelts. Trudy TSNII MPS no.204:42-62 '60. (MIRA 14:4)

(Windbreaks, shelterbelts,etc.)

CHIRKOV, V.A.

Growth and snow-protection function of tree planting in arid steppes of northern Kazakhstan. Trudy TSNII MPS no.204:63-74 '60. (MIRA 14:4)

(Kazakhstan--Windbreaks, shelterbelts, etc.)

CHIRKOV, V.A.

Shelterbelts in excavations for fill dirt along railroad lines.
Trudy TSNII MPS no.204:141-150 '60. (MIRA 14:4)

(Windbreaks, shelterbelts, etc.)

CHIRKOV, V.A., starshiy nauchnyy sotrudnik

Tree planting for the protection of seachores. Put' i putekhoz. 6 no.2:42-43 '62. (MIRA 15:2)

1. Laboratoriya zashchitnykh lesonasazhdeniy Vsesoyuznogo nauchno-issledovatel'skogo instituta transportnogo stroitel'stva.
(Shore protection)

KHAYKIN, A.B., kand.tekhn.nauk; CHIRKOV, V.A., inzh.

Marine electric power station of a line icebreaker with a self-excitation system. Sudostroenie 29 no.4:35-39 Ap '63. (MIRA 16:4)
(Electricity on ships) (Ice breaking vessels)

CHIRKOV, V.A., inzh.

Selecting a program for a diesel propulsion system with a controllable pitch propeller. Sudostroenie 30 no.9:31-32 S '64. (MIRA 17:11)

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ACC NR: AP6024513 SOURCE CODE: UR/0386/66/004/002/0052/0054

AUTHOR: Gorelik, V. S.; Zubov, V. A.; Sushchinskiy, M. M.; Chirkov, V. A. 59 B

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: Possibility of observing induced infrared radiation in Raman scattering of light

SOURCE: Zh eksper i teor fiz. Pis'ma v redaktsiyu. Prilozheniye, v. 4, no. 2, 1966, 52-54

TOPIC TAGS: molecular spectrum, Raman scattering, ir radiation, ir quantum generator, stimulated emission, spectral distribution

ABSTRACT: The authors discuss a new mechanism for producing population inversion between vibrational or vibronic levels of molecules. It is shown that if certain conditions for the possible transitions between molecular levels are satisfied, such that one of the levels does not become populated in the case of Raman scattering of light, so that the thermal distribution of the molecules over the vibrational levels may become disturbed and population inversion may occur. The required threshold power is evaluated from the gain per unit length of the transition near the generation threshold, and it is shown by preliminary estimates that the required minimum power is 10^7 W/cm^2 for liquids and 10^4 W/cm^2 for gases. The latter is attainable with a xenon lamp (power ~10^5 W/cm^2), and the estimated molecule density at the upper level

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